Sherburne NWR - Narrative Report -
1969

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Sherburne NWR

MONTHS OF August 27 TO October 29, 1970

(1) Species	(2) Weeks of reporting period: Aug 27	Sept 2 3	Sept 3 10	Sept 4 17	Sept 5 24	Oct 6 1	Oct 7 8	Oct 8 15	Oct 9 22	Oct 10 29	
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada						20					
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	480	480	480	470	470	470	715	1900	6500	260	
Black						10		10			
Gadwall	10	10	10	5	5	5		200			
Baldpate	15	15	500	500	960	960	25	5	20		
Pintail				5	5	5	30	20	10		
Green-winged teal	200	200	125	125	50	50	10	5			
Blue-winged teal	2015	2015	1100	1100	210	210					
Cinnamon teal											
Shoveler				5	5	5					
Wood	890	890	450	450	5	5					
Redhead	10	10	10	5	5	5			2		
Ring-necked	160	160	115	115	70	70	25	20	320	360	
Canvasback											
Scaup			5	5	10	10		20	5		
Goldeneye											
Bufflehead							2	5	2		
Ruddy			5	5	10	10	2				
Other (P.B. Grebes)				40	40	40	55	20	10		
Coot:	25	25	10,250	10,250	20,500	20,500	17,760	2830	3575	850	

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Sherburne MONTHS OF November 5 TO December 24, 1969

(1) Species	(2) Weeks of reporting period: Nov 5 (11)	Nov 12 (12)	Nov. 19 (13)	Nov26 (14)	Dec 3 (15)	Dec10 (16)	Dec17 (17)	Dec 24 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada									140		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	910	25							92,120		256
Black									140		
Gadwall									1,715		
Baldpate		5							21,035		
Pintail									525		
Green-winged teal									5,355		
Blue-winged teal									46,550		
Cinnamon teal											
Shoveler									105		
Wood									18,830		
Redhead									329		
Ring-necked	720								15,435		
Canvasback											
Scaup	50								735		
Goldeneye											
Bufflehead									63		
Ruddy									224		
Other									11,555		
Coots:											
	150	150	20						463,645		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	140	20	
Ducks	214,716		
Coots	463,645		

SUMMARY

Principal feeding areas Long Pond, Rice Lake, Orrock Lake

Round Pond

Principal nesting areas

Reported by Robert G. Yoder, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Sherburne NWR For 12-month period ending August 31, 1969

Reported by David Goeke Title Ass't Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
1	Crops	2,186.4	Ducks	43,123	217	207
	Upland	4,380.7	Geese	673		
	Marsh	3,373.7	Swans			
	Water		Coots			
	Total	9,940.8	Total	43,796	217	207
2	Crops	834.7	Ducks	14,242	72	68
	Upland	1,253.0	Geese			
	Marsh	1,095.9	Swans			
	Water	17.9	Coots			
	Total	3,201.5	Total	14,242	72	68
3	Crops	706.6	Ducks	30,726	154	147
	Upland	3,069.4	Geese			
	Marsh	2,182.6	Swans			
	Water	215.7	Coots	400		
	Total	6,174.3	Total	31,126	154	147
4	Crops	983.8	Ducks	21,759	109	104
	Upland	2,104.4	Geese			
	Marsh	1,447.4	Swans			
	Water	250.2	Coots	230		
	Total	4,785.8	Total	21,989	109	104
5	Crops	556.5	Ducks	6,066	30	29
	Upland	1,436.2	Geese			
	Marsh	482.9	Swans			
	Water		Coots			
	Total	2,475.6	Total	6,066	30	29
5	Crops	554.0	Ducks	15,957	80	77
	Upland	2,543.0	Geese			
	Marsh	1,214.7	Swans			
	Water	12.2	Coots			
	Total	4,323.9	Total	15,957	80	77
Total	Crops	5,822	Ducks	131,873	662	632
	Upland	14,787	Geese	673		
	Marsh	9,797	Swans			
	Water	496	Coots	630		
	Total	30,902	Total	133,176	662	632

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should be equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Sherburne Months of January 1 to December 30 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common loon	2	5/3	3	6/12	3	8/22		1	1	3
American coot	50	5/3	20,500	10/1	20	11/12				75
Great Blue heron	6	5/10	35	6/15	1	10/15			10	40
American bittern	1	5/11	12	6/3	1	10/15				20
Green heron	1	5/10	50	8/1	1	9/15			15	75
Pied-billed grebe	5	5/3	80	7/1	10	10/22			30	150
Black-crowned night heron	1	4/2	2	4/16	2	4/16				10
Horned grebe	1	4/14	45	4/23	23	4/30				100
Red-necked grebe	1	4/11	7	4/12	1	4/23				25
Sandhill crane	3	4/10	4	4/10	4	10/15		1	2	5
II. Shorebirds, Gulls and Terns:										
Black Tern	1	5/23	100	7/14	8	8/17				200
Kildeer	7	5/3	65	7/7	6	8/31				200
Spotted Sandpiper	1	5/3	15	7/21	1	8/31				50
Greater Yellowlegs	4	5/3	10	5/31	2	8/7				40
Lesser yellowlegs	2	5/3	15	6/14	1	9/15				10
Common snipe	1	4/10	50	4/23	3	10/15				100
Ring-billed gull	1	4/4	35	4/9	20	9/25				50

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	5	5/3	500	7/14	1	10/15		300	1000
White-winged dove									
IV. Predaceous Birds:									
Golden eagle									
Duck hawk	1	11/15	1	11/15	1	11/15			
Horned owl	All year		75	6/1				25	75
Magpie									
Raven									
Crow	All year		250	8/31					500
Bald Eagle	1	11/15	1	11/15	1	11/15			1
Goshawk	2	2/7	2	2/7	2	2/7			2
Sparrow hawk	2	5/3	150	8/19	1	10/15		100	300
sharp-shinned hawk	1	4/10	15	4/30	15	4/30			30
Red-tailed hawk	7	5/3	25	5/12	1	10/15		15	20
Marsh hawk	1	5/28	2	6/12	1	11/15			20
Broad-winged hawk	1	4/21	1	4/21	1	4/21			1

Reported by.....

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C. 36104

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Sherburne Months of January 1 to December 31, 1969

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	upland, bottomland timber & scrub swamp 15,595 acres		12	100	50:59	500	0	0	1000	
Pheasant	Grassland, reverting agricultural lands marshes & fields 16,058 acres		0	0		0	0	0	25	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, phesants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

*Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Sherburne Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed deer	Cropland 5,822 Upland 14,787 Marsh 9,797	U	50	0	0	0	U	U	U	0	-	300	250	U

Remarks:

Reported by J. Douglas Thompson, Bio. Tech.

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755
Form NR-5
60701

DISEASE

Refuge Sherburne NWR Year 19 69

Botulism

Period of outbreak None this year

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage)

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease

Species affected

Number Affected

Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

-1757
'orm NR-7
Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS (1)

Refuge Sherburne Year 1969

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Norway Pine	5000	R		Minn. Forestry	15/M		Sherburne	600/A	16.7 acres		5/5-9		
Black Spruce	2000	R		Service Carlos	15/M								
Colorado Spruce	2000	R		Avery Nursery	15/M								
Norway Pine	1000	R			--								

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

'otal acreage planted:
Marsh and aquatic
Hedgerows, cover patches
Food strips, food patches
Forest plantings 16.7

Remarks: The 1,000 Norway pine were sent as part of an adjustment for trees purchased in 1968 and sent in very poor condition. No charge was made for these trees.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Sherburne NWR County Sherburne State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn	462	16,170 bu.	4	140 bu.	150	5250 bu.	616		
Rye (Harvest 1969)	318	5700 bu.				600 T.			
Rye (Harvest 1970)						300 T.	325	Rye-cover & browse	643
Red & Alsike clover						100 T.	250	Red & Alsike clover cover,browse, green manure	300
Alfalfa							5	cover, browse=alfalfa	155
Sweet Clover							10	cover-sweet clover	10
Native grasses							100	cover, native grasses	180
								Fallow Ag. Land 4530	1288

No. of Permittees: Agricultural Operations 13 Haying Operations 4 Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Alfalfa	140	93	$93	1. Cattle	10	40	$10	4
Red Clover	75	50	$50	2. Other	None			
				1. Total Refuge Acreage Under Cultivation				1904
Hay - Wild	None			2. Acreage Cultivated as Service Operation				115

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1570
NR-88
(4/54)

REFUGE GRAIN REPORT

Refuge Sherburne National Wildlife Refuge Months of January through December, 1969

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn, yellow dent shelled		700	700			400	400	300		X	None
Corn, yellow dent ear	50	400	450			150	150	300		X	None
Barley	50		50			10	10	40		X	40
Rye, emerald	200		200	155	45		200	0			

(8) Indicate shipping or collection points Princeton, Minnesota

(9) Grain is stored at Refuge Granary

(10) Remarks

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DEP. SEC., WASH., D.C. 17065

3-1759
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge Sherburne NWR Year 19~~X~~69

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
Purple vetch	500 lb.	September	combine	.25/lb				

Interior Duplicating Section,
Washington 25, D. C. 17263

3-1761
Form NR-11
(2/46)

TIMBER REMOVAL

Refuge Sherburne NWR Year 1969

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Nelson's Tree Farms	Sher 7-70	159,a	7.6	thinning to 300 trees/A	.10/tree removed	$55.00	thin to 10-12' centers	white spruce Christmas trees
Nelson's Tree Farms	Sher - 2	22,43,179, 259 & 266	152	905 trees	.25/tree	$226.25	cutting to take place until 1970 Clear cut Scotch. Pine-leave 100 Norway pine/A.	Norway & Scotch Pine Christmas trees
Nan Conifer Co.	Sher - 1	28	35	4,823 Scotch pine 2034 Norway pine	.35/tree .20/tree	1688.05 406.80	Cutting to take place until 1970. Clear cut Scotch Pine-leave 100 Norway pine/A.	Norway & Scotch Pine Christmas trees

Total acreage cut over 194.6 Total income $2376.10

No. of units removed B. F. ..... Method of slash disposal Piled at edge of plantation
Cords .....
Ties .....
8312 Christmas trees

INT.-DUP. SEC., WASH., D.C. 36103

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sherburne

Proposal Number: 2-69

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
July 10 - August 15	Leafy spurge	N. & N.E. sections of the Refuge	3	Borolin 2%	3 lb.	1 lb./A	Granular	broadcast
	Canada thistle		5	Tordon 212	15 lb.	3 lb./A	water 3lb/25 gal.	hand sprayer

10. Summary of results (continue on reverse side, if necessary)

This is the first use of Borolin on the Refuge. Control of spurge seemed excellent, however this has been the case in past years with other chemicals also. Field investigation in the spring should reveal actual results.

Tordon 212 has given excellent results with Canada thistle.

35500

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sherburne

Proposal Number: 1-69

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 30 - June 15	Quack grass	all farming units in corn	616	Atrazine	924	1-2 lb/A	Water 50gal/A	tractor sprayer

10. Summary of results (continue on reverse side, if necessary)

A cool wet spring favored growth of quack grass and reduce effectiveness of the chemical. Control was fair to good.

35500

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sherburne

Proposal Number: 5-69

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June	Poison Ivy	Nature trail	5	2,4-D	10 lb.	2 lb./A	water 25 gal/A.	hand sprayer

10. Summary of results (continue on reverse side, if necessary)

Results only fair. Plants recovered by mid-summer.

35500

NARRATIVE REPORT

for

1969

SHERBURNE NATIONAL WILDLIFE

REFUGE

Princeton, Minnesota

PERSONNEL ROSTER

Permanent Personnel

Robert G. Yoder . . . . . .Refuge Manager
E. Homer McCollum . . . . . Soil Conservationist
David E. Goeke (Transferred 9/20/69) . . . . . Ass't Refuge Manager
Patricia A. Dunham . . . . . Clerk-Typist
Wesley C. Thompson . . . . . Maintenanceman
Reuben A. Mathison . . . . . Maintenanceman
Henry W. Trebesch, Jr. . . . . Maintenanceman
(Converted from temp. to perm. 1/26/69)

Temporary Personnel

Milton C. Elveru, Patrolman . . . . . 1/1/69 to 11/1/69
Orville Johnson, Laborer . . . . . 1/1/69 to 11/1/69
Gordon W. Wold, Laborer . . . . . 1/1/69 to 11/1/69
Dennis W. Strom, Biological Tech. . . . . 1/1/69 to 5/6/69
Merlin A. Wicktor, Hvy Eqpmt. Operator . . . . . 1/1/69 to 12/31/69
Robert L. Marrs, Laborer . . . . . 5/2/69 to 10/18/69
James D. Thompson, Biological Tech. . . . . 6/9/69 to 12/31/69

CONTENTS

SHERBURNE NATIONAL WILDLIFE REFUGE

Princeton, Minnesota

NARRATIVE REPORT

Calendar Year 1969

I. General

A. Weather Conditions - 1969

TABLE I

	Precipitation			Temperature	
	Snowfall*	This Month**	Normal***	Maximum**	Minimum**
January	22.9"	2.33	.90	33	-24
February	6.8	.62	.90	40	-22
March	4.0	.49	1.50	47	-9
April	2.1	3.20	2.00	74	22
May	T	1.62	3.70	95	30
June	0	2.31	4.50	84	32
July	0	5.47	3.30	94	37
August	0	2.32	3.70	93	46
September	0	2.57	2.40	84	32
October	4.0	1.36	2.00	84	16
November	4.4	.92	1.50	67	-3
December	25.0	1.95	.80	48	-6
Annual Totals:	69.2"	25.16	27.20	Extremes: 95	-25

* Data obtained from U.S. Weather Bureau Office in St. Cloud, Minn.

** Data obtained from official weather station maintained by Gordon Wold of rural Santiago, ½ mile north of the Refuge.

*** Data obtained from Milaca, Minn. weather station located 15 miles north of the refuge.

The year started miserably, weatherwise, with snow, sleet and below zero temperatures as January recorded 17 days with some type of measurable precipitation. By the end of this month there was a total of 43 inches of snow on the ground and all normal activity had come to a standstill. February and March were generally mild with little or no precipitation and the St, Francis River showing signs of opening at the close of March. April, true to form, came in with several days of below zero temperatures, however when this short lived cold snap ended a quick warming trend moved in causing melting snow to bring the river up to bank level and over on April 6. May was generally mild and dry with Refuge visitor's popping up everywhere. June turned unseasonably cool with temperatures averaging 10° or more below normal, but July warmed up with several days over 90° and a total of 4.27 inches of precipitation. The fire hazard was very high in August and this dry condition extended up into late September when several inches were picked up, mostly on the 22nd. First frost showed up in isolated pockets on September 24 and first snow, of about 1 inch accumulation, occurred on October 12. November storms dumped 3 inches of snow and brought sub-zero temperatures and freeze-up followed closely on Nov. 18. The first major storm of the 1969-70 season started December 5 and when finished a total of 12 inches had dropped. Subsequent settling and additional snowfall gave approximately 14 inches of snow on the ground as the year came to an end.

B. Habitat Conditions

1. Water. Late March showed the St. Francis River opening and a subsequent rapid rise in water levels due to the quick snow melt. On Easter Sunday, April 6, this river went over it's banks and flooded roads, put a considerable amount of water over the refuge proper, and had a width of about 1½ miles near the maintenance shop. The flooding was completely over by the last of April and fortunately no property damage was reported, however the farming program was delayed somewhat due to moist field conditions. Water levels remained good through May and into June but lack of moisture in the form of precipitation started to cause some drying up and lake levels to drop. By August water levels were critical with many type III and IV marshes beginning to dry up. The water table appeared to have dropped nearly two feet and it was possible to go into borrow pit areas along County Road # 5 with tracked equipment, deepen these areas and use the material for construction of islands. Several of these borrow pits were rejuvenated in this manner so that approximately 6 acres were deepened and/or had islands constructed. Only Lake Josephine, Orrock Lake, Bergerson slough, Rice Lake, and Long Pond contained water to any degree besides the St. Francis River. During the fall, waterfowl habitat was critically curtailed, however so was boat and all other travel which hampered

hunter activity. Freeze-up as usual occurred in November with this year being on the 18th as compared to Nov. 11 in 1968 and Nov. 15 in 1967.

2. Food and Cover. Cover seems to be of sufficient quantity and quality to support present wildlife, however food does seem to be a limiting factor especially so in the winter and spring months. The refuge share of corn has been left standing in the field to supplement browse and other natural foods. A total of 150 acres of corn was left standing in 12 agricultural units. As usual these fields are receiving good to excellent usage as well as the added benefit of scattering the wildlife throughout the units. Waterfowl use is negligible at present due to heavy hunting pressure and the relatively low numbers of ducks and geese using the refuge. An aerial census on February 17 resulted in a count of 156 deer on the refuge in eight different yards. Ground checks showed good utilization of corn patches and all deer in good condition considering the severe weather this winter.

One hundred and seventy-five acres of clover were planted to provide additional nesting cover, food, and aid in soil build-up. Along with this, 100 acres of native grasses were planted which included big and little bluestems, Indian grass, and switch grass. The mast crop this year was good to excellent in areas having mature trees, however too much of the refuge is covered with scrub oak providing little browse and no acorns. Hazel nuts were good to abundant this year with only a small percentage wormy. Wild rice showed quite a good come back in Orrock Lake this year after the very poor production of last year. Other areas such as: Rice Lake, Josephine Lake, Johnson's, Durgin's and Bergerson's slough showed average growth. An August check showed a high percentage of the seed heads had not filled out so what looked like very good production was indeed an average or poor crop. Compared to other years and other surrounding counties, the overall wild rice production in Sherburne County was fair to poor.

In most refuge waters sago pond weed has now been largely replaced by coontail as a result of carp infestation and drastic water fluctuations. Other pond weeds such as floating-leaf, large-leaf, and flat-stemmed pondweeds provide some waterfowl food as do arrowhead, duck weeds, and spike rush.

II. Wildlife

A. Migratory Birds

1. Swans. Whistling swan have in the past used the refuge area as a migration stopping place but the first couple of years after

establishment of the Sherburne, no use was observed. In 1968 we recorded 56 use days and a peak number of 8 swan visiting the refuge. During April of this year there was a record 158 actually recorded as stopping on the refuge for the peak population while 1300 swan were recorded passing over during this migration. Total use days for the period was 1120 which was quite a substantial increase over that of the previous year.

One yellow marked swan was observed about 5 miles north-east of the refuge and reported to us by the local Conservation Officer. It was found out later that this bird was one of a couple hundred sprayed yellow and some fifty of these fitted with transmitters and were being followed to their breeding grounds. Between November 13th and 16th whistling swan were observed migrating south over the Sherburne Refuge. It is not known if any used the refuge as a stop over on their way. Our trumpeter swans were 3 years old this July but nothing was observed to indicate that they were more than good friends at this time. They came to us in a round about way from Red Rock Lakes to Hennepin County Park and then us and have been quite as asset to the display pen and have stimulated a great deal of public interest. We hope that "4" years old is the age of understanding and that our swan soon realize that pen plus cob could equal cygnet.

2. Ducks. Our first migrant were observed when several mallards were sighted on the St. Francis River on March 21. Battle Brook, one of the first to open up below Elk Lake, had mallards using it during the end of March. At this time open stretches were showing in the St. Francis and wood duck and goldeneyes were quite common. This year spring floods and northward migration seemed to hit the Sherburne at the same time so that our observations jumped from four species and a peak population of about 150 to that of ten species and over 12,000 birds for a record peak number. The five species showing the greatest abundance during spring migration are, in order of peak populations: mallard, scaup, ring-necks, goldeneye and pintail. In 1968 the species by peak populations were: blue-winged teal, mallard, wood duck, ring-necks and scaup.

Duck production on the refuge this year was less than spectacular. Last year, 1968, we showed an increase of 17% from the previous year or an estimated production figure of 715. In 1969 the production was estimated at 632 young raised which just about nullifies the gain of 1968. Poor water conditions is the chief offender coupled with lack of adequate habitat. Mallard production was relatively stable with a slight increase from 121 produced in 1968 to 160 birds noted for blue-winged teal. The wood duck production is the one that hit the skids and dropped from an estimated 265 raised in 1968 to that of only 120

in 1969. Observations were few and far between as noted in May when one of our counts showed only four pair of wood duck on roughly a 10 mile stretch of river. June observations of waterfowl continued to be low with very few broods seen and wood ducks just about non-existant. Some blue-winged teal and mallard were noted at this time.

There was an estimated 2,000 ducks and about 20,000 coot on the refuge prior to the opening of hunting season, but this changed drastically by the first of October. Long Pond, a 20 acre impoundment and one of the three closed areas on the refuge at this time, provided a safe loafing and resting area for 5,000 to 7,000 ducks which were mostly mallard. We would like to think that Long Pond is an indication of what can be accomplished on the Sherburne and is indicative of things to come. For instance, Long Pond was constructed in 1967 and held 1600 mallards throughout most of that hunting season. Last year 2500 ring-necks and scaup used this closed area, while all other areas had the waterfowl burned out the first few days of the season. This year on October 23, an estimated 7,000 ducks were observed with most of these being mallard. The count was made when these birds flew out during the evening to feed and returned to this sanctuary before morning. Feeding flights were observed toward the south to Big Rice Lake on the refuge and to Little Rice Lake which is a state wildlife management unit just north of the refuge. Long pond held birds in the area long after everything else had moved out, but by October 30, there was less than 1,000 ducks on the refuge and this dwindled to zero by freeze-up in mid November.

3. Geese. The first Canada goose sighted in northward migration was on March 22. This compares with the first recordings in 1968 on March 14 and in 1967 on March 26 for this species. Two-hundred and fifty Canada geese were sighted the first week of April with a flock of 50 putting down to rest with our captive flock. Occasional flocks were decoyed into stopping by our captive flock all through the month of April, however no sustained numbers were observed using the refuge this spring. No blue and/or snow geese were observed using the refuge during this period and no wild geese stayed over beyond migration into the summer. Fall migration arrived the early part of October when large numbers of blue and snow geese were observed moving southwest on the 10th, 11th and 12th. Canada geese were spotted later in October and several groups were decoyed by our captive flock. Migrants were reported moving south just prior to our big snow storm on Nov. 17. These birds are constantly harassed and until full possession of the refuge is a reality there will be little use due to the spotty ownership set-up and lack of open bodies of water. No blue or snow geese were known to have been shot this season, however one immature Canada was taken on the refuge. Coloration, weights and measurements indicate this to be B. c. maxima and not belonging to our captive birds.

Goose use days have decreased slightly while duck and coot have again increased. Most of our goose useage has been in the spring and is probably directly correlated to our captive flock. Fall useage will develop and build up as soon as ownership is established and impoundment work begins.

A summary of duck, goose and coot use days for the past four years is as follows:

Year	Ducks	Geese	Coots
1966	174,670	840	104,405
1967	181,196	1,611	105,756
1968	335,181	5,684	195,510
1969	528,246	4,039	469,469

A progress report on the refuge's captive goose program will be discussed in Part V.

4. Other Marsh Birds. The first sighting of American coots was during the first week of April when 5 were observed on Orrock Lake. They built up to a peak number of 250 birds during the middle of April and shortly after that started to decline and were all gone by the last week of May. Like bad pennies they showed up again during the last week of August when 25 were observed. It did not take long for this species to build up to a peak population of 20,500 by late September and remain at this number into the first week of October when the numbers started to dwindle. The last coot were seen on November 12. The majority of our use is in Orrock Lake where up to 90% or more of the population is found and it is in this area that they consume most of the wild rice and other aquatics. No production occurred on the refuge.

The rookery of great blue heron which had been active on the Fox tract in section 24 of Santiago Township was abandoned this spring and no use in this area occurred. It is not known why these birds moved their base of operations but it is suspected that great horned owls added to the situation because they were seen nesting in the immediate area. Approximately 40 great blue heron were seen in the area during early spring but no nests were observed on the refuge.

Pied-billed, horned, and red-necked grebe were all observed on the refuge this year. On April 11 the first sighting of a red-necked grebe was made for a refuge record along with the horned grebe on

April 14. It was not until May 3 that the pied-bill grebe arrived at the refuge. Four young of the pied-billed grebe were observed on Orrock Lake on June 12, but no production for the other species was noted.

The common loon was first seen this period on April 12 when thirteen were observed on Rice Lake. The first production of this species was observed on June 12 at Orrock Lake when a pair of loon with a downy chick was recorded. The loon was recorded as being on the refuge as late as August 22 this period.

A new species was added to the refuge list when a greater sandhill crane was observed on April 9. Throughout April, May and June, refuge personnel observed two sandhill crane on several occasions, however no evidence of nesting on the refuge was uncovered. Four sandhill crane were observed during August and September and it was in September that identification of two young were made. This is the first full season that this species has occurred on the refuge and probably the first production in a good many years.

5. Dove. Two hundred mourning dove were captured and banded during the period June 19 and August 7. In addition to these, 40 dove were re-captured that had been banded previously by refuge personnel in 1967. Four predations occurred and these were credited as follows: two to hawks, one to a cat, and the other to a skunk. A scattered hatching was noted to have occurred throughout May and June with the greatest percent of birds examined being hatched during a period from the middle of June through the first week of July. Recommended for future banding would be: to begin trapping operations after June 15, several sites should be selected and pre-baited before trapping, however only one or two sites should be used at any one time with numerous traps utilized for the most efficient operation. First sighting of a dove on the refuge for this period was on March 21 and the last sighting was the last of August. Production was estimated to be 300 young with an estimated population of 1,000.

B. Upland Game Birds

Pheasant production for the past three years of 1966, 67 and 68 was exceedingly poor with only one brood recorded each of these years. Even this poor record of preceding years was not duplicated since no pheasant production was observed throughout this year. Heavy snows starting in December and continuing through the winter have been exceedingly severe on the refuge and state populations. One sighting of a rooster was reported on June 10, however this was the only one reported for the period. From this meager data it was estimated that the refuge population was about 25 birds.

Throughout Minnesota the ruffed grouse population was considered to be at a near record high in 1968 and the same seems to be holding true for 1969. Twelve broods were observed this year as compared to 10 in 1968 and only 4 in 1967. Conditions seemed to be just right and we had grouse throughout the refuge which provided good to excellent hunting. The degree of success was not always as good as the hunting but we had very few complaints as compared to many happy hunters.

C. Big Game Animals

Sherburne's only big game animal is the white-tailed deer and the refuge herd seems to fluctuate little between 200 to 300 animals. This year hunting pressure was as usual very heavy with a fairly good take by the hunters. A record 50 head was removed from the refuge area which at this time still has roughly 8,000 acres of private holdings within the boundary. Open weather seemed to account for the large number of hunters in the field as compared to the wet conditions prevalent last year.

Deer use of the refuge standing corn crop was fair to good this year and this is accountable to the deep snows throughout the winter. An aerial census on February 17 showed 8 yards with a total count of 156 head. A ground check in late March showed the deer in good shape and no browsing of the yards.

D. Fur Animals, Predators, Rodents and Other Animals

1. Muskrat. No spectacular comeback was noticed in the Refuge's muskrat population after the decline of last year. Partial ownership and the shot-gunned pattern of private holdings within the approved boundary makes it almost impossible to instigate control programs at this time. Both den and bank dwelling rats seemed to be making a slow increase and this is due somewhat to the low water levels this summer and fall as well as a high winter kill. Proper management programs are being formulated for the refuge and will be put into effect as soon as possible and depending on acquisition and development.

2. Mink and Beaver. The mink populations while not overly large is considered adequate for the area and probably fluctuates with that of the muskrat population. Heavy trapping in the past and a continued trapping of the refuge area has undoubtedly held these species in check if not somewhat below a normal or desired level. A cooperative venture between the state Conservation Department and the refuge in live trapping problem beaver from the surrounding area and releasing them on the refuge is helping to rebuild this population. Once again, management programs will be put into practice when adequate ownership is acquired to properly enforce them.

3. Raccoon, Striped Skunk, and Fox. These species are all rather common on the refuge and at this time the extent of their predation is unknown. There has been quite a bit of local interest in the hunting and trapping of both raccoon and fox and numerous hounds are kept for this purpose. This seems to be less of a problem each year and the phasing out of this type of hunting is apparently less harmful then suspected. Some hunting is still carried on where large blocks of private holdings remain but this is becoming less of a problem each year as indicated.

4. Rabbits. The cottontail seems to be on the upswing after it's numbers were exceedingly low for a number of years. Like the pheasant, being considered for the rare and endangered species, this species was once common in the area and provided many hours of sport for the local hunters. More sightings and increasing number of signs in the snow each year from 1967 on leads us to believe that the cottontail is tending toward a healthy population once again.

The white-tailed jackrabbit is about in the same category as is the cotton tail although the sightings of this species are somewhat more numerous and leads us to believe that it too is recovering from a population low.

E. Hawks, Eagles, Owls and Crows

1. Hawks. Once again the sparrow hawk is our abundant species and during the summer young can be seen along all roadways.

The Cooper's hawk was added to the refuge bird list this year and it was first sighted on June 12. Other common hawks are the red-tailed and broad-winged hawks along with the sharp-shinned hawk. The marsh hawk, which was once abundant, is noticeable by it's absence over most of the surrounding area.

2. Eagles. The past several years have shown that our transit eagle population is increasing. No nests of this group have been discovered on the refuge but it is possible we may have a resident population one day. Both adult and immature bald eagles have been reported on the refuge in past years and this year we observed the first golden eagle. This immature was sighted on January 13.

3. Owls. Great horned owls are common and as reported earlier might have been partly responsible for the exodus of our great blue heron population. Two of these birds were forcibly removed from the area of our captive goose flock this summer. Last year's fiasco, when we lost five goslings, put us on the alert for a repeat performance this year.

4. Crows. These birds are year-round residents, however the winter population dwindles somewhat and the crow is not too numerous. Spring migration is quite large with several thousand birds passing through this area. The refuge has a summer population of around 150 birds.

F. Other Birds

In 1966 a Refuge Bird List was begun with a total of 109 species. By 1967 there had been 19 more species added and before printing in 1968 there were 33 more species added. Now in 1969 we have the following 20 species to add to our somewhat out-dated bird list which is attached.

1. Red-necked grebe
2. Double-crested cormorant
3. Cooper's hawk
4. Golden eagle
5. Sandhill crane
6. Red-bellied woodpecker
7. Bank swallow
8. Rough-winged swallow
9. Tennessee warbler
10. Blackpoll warbler
11. Savannah sparrow
12. Oregon junco
13. Palm warbler
14. Bonaparte's gull
15. Long-billed dowitcher
16. Hudsonian godwit
17. Bay-breasted warbler
18. Solitary vireo
19. White-rumped sandpiper
20. Virginia rail

G. Fish

Carp continue to be the number one fish management problem in terms of numbers, size, and destruction of aquatic vegetation. Large numbers of these fish inhabit all waters of the refuge because of the extensive drainage complex of ditches which connects all marshes with the St. Francis River. Acquisition has not yet reached the stage where carp control can be instigated.

Northern pike are the only "game" fish of importance on the refuge and several deep holes in the St. Francis River have been fished with up to 9 pound northern taken.

H. Reptiles and Amphibians

1. Reptiles. Following is an up-to-date listing of the species found on the refuge at this time:

Turtles	Painted turtle	Chryaemys picta
	Common snapping turtle	Chelydra serpentina
	Blanding's turtle	Emydoidea blandingi

Snakes	Plains garter snake	Thamnophis radix
	Common garter snake	Thamnophis sirtalis
	Bull snake	Pituophis melanoleucus
	Red-bellied snake	Storeria occipitomaculata
	Smooth green snake	Opheodrys vernalis
	Plains hognose snake	Heterodon nasicus
	Eastern hognose snake	Heterodon platyrhinos
Lizards	Black-banded skink	Eumeces septentrionalis

2. Amphibians. This group is also rather poorly known on the refuge but the list is growing.

Leopard frog	Rana pipiens
Eastern wood frog	Rana sylvatica
Green Frog	Rana clamitans
Mink frog	Rana septentrionalis
Eastern gray tree frog	Ryla versicolor
Swamp tree frog	Pseudacris nigrita
American toad	Bufo americanus
Tiger Salamander	Ambystoma tigrinum

I. Disease

None to report this period.

III. Refuge Development & Maintenance

A. Physical Development

1. Buildings. The refuge now maintains four homes on the project for its permanent staff. This year Quarters 301, in the northwest section of the refuge, was added to the growing number of homes after completion of some carpenter work upstairs, some remodeling and painting throughout along with plumbing repairs. The existing shallow well was tested and found contaminated and so a deep well was immediately developed and an abundance of good water was reached at 71 feet.

Other minor repairs were completed to all refuge homes and buildings as needed, as was a new well at the maintenance shop and goose barn complex. Several shallow sandpoints servicing these structures were either contaminated or showed high nitrate contents so that one deep well was developed and several sandpoints were phased out. This well was put down to a depth of 67 feet where limestone was hit so that we had to settle for 20 to 25 g.p.m.

2. Farm Site Renovation. This project was initiated in 1966 when

the first six farm sites were renovated. In 1967 an additional 38 sites were restored to as close a natural condition as possible. This work consists of dozing in old foundations and basements and burying cement slabs and junk piles. All accumulated debris is disposed of thereby eliminating dangerous holes, scrap, glass and other unsightly and dangerous items. The areas are then leveled and returned to a near natural condition by planting trees, shrubs, and native grasses. Thirty-three sites were renovated in 1968 bringing the total to 75. Surplus building sales in May and September, as shown in the collection and Receipts section, brought on a lot of activity looking and buying however not much moving of buildings off the refuge. Several factors such as a saturation of old buildings on the market, high moving costs, and shortage of movers who will handle these buildings have left us with homes, barns and other out buildings. Only four home sites were cleaned-up, leveled, and returned to a natural state this period making a total of 79 to date.

3. Boundary Posting and Fencing. Both fencing and posting continues on the boundary and along interior roads as tracts are purchased and final clearance is made for refuge management. This period approximately three miles of boundary fencing was added as was an estimated eight miles of posting. Most of this posting was along both sides of County Road #5 which traverses the refuge north and south and was black-topped this fall. Three closed areas, of about a section each in size, were set-up for the protection of loafing and resting waterfowl and the protection of our captive goose flock. All of these areas were fenced and/or posted prior to hunting season.

4. Water Control. With roughly 8,000 acres of land still in private ownership and shotgunned throughout the refuge, it is impossible to do much in the line of water manipulation or control. However, we do have several blocks of land where small dikes have been constructed and will hopefully impound water on only refuge property. One small dike was constructed west of County Road #5 and was designed to divert water through several low marshy areas instead of having a straight shot into the St. Francis River. Another low dike was constructed, using a dragline, and will back water up and form a shallow impoundment just north and east of our captive goose area. In addition to the low dikes there were a series of islands constructed as loafing or nesting sites. This spring and summer will tell us how good our eye-ball engineering was on this small project. As mentioned earlier the dry summer and fall caused the water table to drop exceedingly low and provided the opportunity of deepening several borrow pits. We had a D-7 and D-8 deepening borrow pits along County Road #5 for several weeks and were able to cut from 1 to 2 feet deeper than previously. These areas will provide many hours of waterfowl viewing to the public in the area of our heaviest travel.

5. Equipment. A continuing program of preventative maintenance and repair work was completed on all refuge vehicles, farming equipment, and heavy construction equipment. The following was picked-up on surplus or borrowed from the Tamarac Refuge on Jobs Corps Center:

Austen-Western motor grader/snow plow
D-7 caterpillar
D-4 caterpillar
D-4 w/front-end loader
Bucyrus-Erie dragline
5 yard Dump truck
8 yard scraper

6. Public Use Facilities and Projects. Public use is becoming and will be a major phase of our operation here at the Sherburne because of our proximity to the Twin Cities and 2½ million people. The following is a partial list of some of the items or facilities which were developed strictly for the benefit of visitors or as by products of public use:

-A new refuge brochure was developed with a map showing items of interest.
-Two new information stations were constructed on main entrance roads and provided with leaflet dispensers.
-Existing visitor contact stations were upgraded with new visual displays of wildlife photos and development maps.
-A 300' floating boardwalk was completed over a woodland pothole on the second loop of our nature trail.
-A loop road was developed which encircles the display yard and pond for visitor viewing.
-A hunting map showing closed areas and giving refuge regulations was developed.
-Our snowmobile trail was altered slightly to correspond with the start-finish location of the Sand Dunes State Forest trail and a new leaflet showing these changes was worked up.
-Boy Scout groups assisted with the construction and installation of metal wood duck nesting houses.

B. Plantings

1. Aquatics and Marsh Plants. Approximately seventy acres of experimental plantings of Japanese, proso and German millets and buckwheat were made in late May and early June. The plantings were made on low, wet ground adjacent to the St. Francis River. The areas used had been in either corn or soybeans in 1968.

The plots were double disced and seed broadcast at approximately 25 lb/acre for millets, 40 lb/acre for buckwheat. Equipment was not available

for soil compaction after seeding, and the need for this operation was evident through much of the growing season. These consitions produced good to excellent drops of buckwheat and Japanese millet, while the proso and German millet was a complete failure.

A similar area, disced in mid-June but not seeded, produced a good crop of smartweed (Polygonum sp.).. Adjacent undisturbed areas (in 1969) contained poor stands of smartweed and moderate stands of wild millet (Echinochola sp.).

Sherburne has no water control system at this time. Utilization of this food will be by spring migrants, dependent on normal spring flooding. The refuge has an extensive area suitable for production of these plants. As a water system is developed, the production of moist soil crops should become a major source of waterfowl food.

2. Trees and Shrubs. Ten thousand trees, Norway pine, black spruce and Colorado spruce were set out this spring. This stock was used mainly for replanting where last years plantings failed. The material was received in good shape and planted quickly, but something, perhaps a dry June, held survival down, or maybe somebody is trying to tell us something.

3. Upland Herbaceous Plants. Approximately 100 acres were seeded to native grass in 1969. Two species, green needle grass and blue gramma were added this year. The seeding mixture consists of big and little bluestem, Indian grass and switch grass mixed on a 20% P.L.S./ acre. Other than seeding costs, competition from quack grass seems to be the main problem in this program.

I understand atrazine has been used on two year old native stands early in the spring, and has slowed down quack without damage to the natives. However, this sounds chancy and costs dollars. So does summer fallowing, unless it can be done by permittees. Row crop farming for a couple of years before seeding seems to work reasonably well. We plan to try burning some areas and seed directly into the burned stubble, as well as burning over some established strips to aid natural seeding between strips. I would be glad to hear from anyone who had had experience in establishing warm season natives in a quack grass patch.

Another approach might be to learn to live with the quack. I have an idea that a fair catch of sweet clover in quack grass sod would provide some top notch nesting cover for several years.

We have prepared six plots for pure stand seedings this spring. The

plots were summer fallowed, then seeded to sudan grass in September. The sudan grew to 10-14" before it froze. We plan to seed directly into the trash. The plots will serve as identification areas for the various grasses, and may be enlarged and used as a seed source in the future.

We became interested in adding some of the native legumes to the grass seedings but ran into a small problem-no seed source. The S.C.S. did considerable work with these plants about 20 years ago, but nothing since. Through their efforts we did get a couple of pounds each of round head lespedeza, Lespedeza capatata, harvested in 1950, and purple prairie clover, Petalostemon purpureum, harvested in New Mexico in 1966. The seed was planted in rows, but for some reason the 19 year old lespedeza seed didn't germinate. There was a fair stand of prairie clover, but it's a long way from home and may not survive the winter.

There are a few scattered patches of both these plants on the area. If we do anything else along this line, it looks like we will have to catch our own seed.

4. Cultivated crops. Refuge personnel went out of the crop farming business and turned this operation over to permittees. A few changes were made in the cropping system and share division and everyone seems reasonably well satisfied.

Basically we are working on a 5 year rotation, 40% of the land in corn for 2 years, 20% in first year red clover, 20% second year clover, 20% rye. This works out fine on paper, but not always on the ground. The permittee furnished all labor and material and leaves a fourth of the corn as the refuge share. One clover harvest, either hay or seed, is permitted after July 20 of the second year. Because of its late maturity we are using mammoth red clover on the upland and alsike in the lower areas. Both produce excellent goose browse - when we get some geese.

Thirteen permittees farmed approximately 1500 acres. Roughly the breakdown by crops was: 600 acres corn, 300 acres rye harvested, 300 acres rye seeded, 250 acres clover seeded. A typical "unusual" growing season, with a cool wet spring, which delayed planting and a dry June and August, which damaged what got planted, cut production considerably.

Like the guy who raised a few potatoes the size of marbles and a lot of little ones, our corn yield ranged from 65 bu. on a few acres, down to a bunch of "nubbins". Average for the refuge was around 35 bu./A. Success on clover seedings likewise ran from good to failure. Average for rye was about 18 bu./A.

C. Collection and Receipts

Three surplus building sales were held during the year. Receipts were $8,150.41 for 54 structures.

D. Control of Vegetation

Chemical control of quack grass in corn was handled by permittees. Atrazine was applied to 600 acres. Refuge personnel treated approximately 3 acres of leafy spurge with boralin, and mowed or sprayed with Tordon 212, 10 acres of Canada thistle.

E. Planned Burning

None this year.

F. Fire

Only one fire occurred inside the refuge boundary, an escaped trash fire on private holdings. Prompt action by the refuge crew held the burn to about .1 acre and saved two out buildings.

Refuge personnel assisted with fire suppression on a state wildlife management area north of the refuge.

IV. Resource Management

A. Grazing

One permit for intermittent grazing on four acres for $10.00.

B. Haying

Four permits were issued for hay harvest on 143 acres of alfalfa and clover. Hay was cut after July 25. A nominal fee of $1.00 per acre was charged.

C. Fur Harvest

Due to incomplete ownership, the refuge is open to trapping under state regulations. Eleven S.U.P.'s were issued at no charge to trappers using the area.

D. Timber Removal

Christmas tree harvest was the only timber cutting on the Refuge. Three permittees took 8,312 trees for $2,366.10. Two areas of spruce were thinned to 10-12' spacing. The permittee marketed the good trees

and piled the culls around the exterior of the plantations for wildlife cover.

The rabbit population is quite low at Sherburne. We estimate that as a result of this program each rabbit has four brush piles of his very own.

V. Field Investigations or Applied Research

A. Progress Report

1. Indian Mound Excavations. A permit was applied for and permission given by the Department for Archaeological Exploration of the Indian Mounds on the Sherburne Refuge. Professor Richard Lane, Ass't Professor of Anthropology at St. Cloud State College, and twenty-five of his students began actual archaeological excavation on the refuge in June of 1969. The location of the Indian Mounds is just slightly north of Rice Lake and a little west along what might have at one time been the lake's shore line. Little or nothing was known of these Indian Mounds, however most of the 20 odd mounds were vandalized at one time or another. It is also believed that an Indian village is associated with the mounds and is along the perimeter area of Rice Lake. A basic draft or working outline was developed prior to the dig, partially gleaned from history or notes of other similar work in Minnesota, and is as follows:

As far as the archaeologists know, man first came to the Sherburne N.W.R. during the late archaic period which is a part of post-pleistocene era. The archaic period is considered from about 8000 - 1000 B.C. with the late archaic period being from 3000 to 1000 B.C. Man hunted and fished and based his economy on the exploitation of both forest and lake resources. He made large, broad bladed dart points for his hunting weapons and made ground and polished stone tools and ornaments. The late archaic is not too well defined in Minnesota, so that the work on the refuge ought to add to the basic knowledge of the period. The woodland period begins about 1000 B.C., after the archaic period and extends until AD 1700. Early woodland, about 1000 to 300 B.C., was when pottery first showed up and it is thought the idea of Indian mounds originated at this time. Middle woodland, from 300 B.C. to AD 700, was a period of highly developed pottery making, ceremonial offerings left in the low built burial mounds, and the first appearance of cultivated plants. Maize in the southern areas but probably "wild rice" in this area. Late woodland from AD 700 to 1700 was a period of large populations and larger mounds with pottery changes and a definite development of the historic tribes.

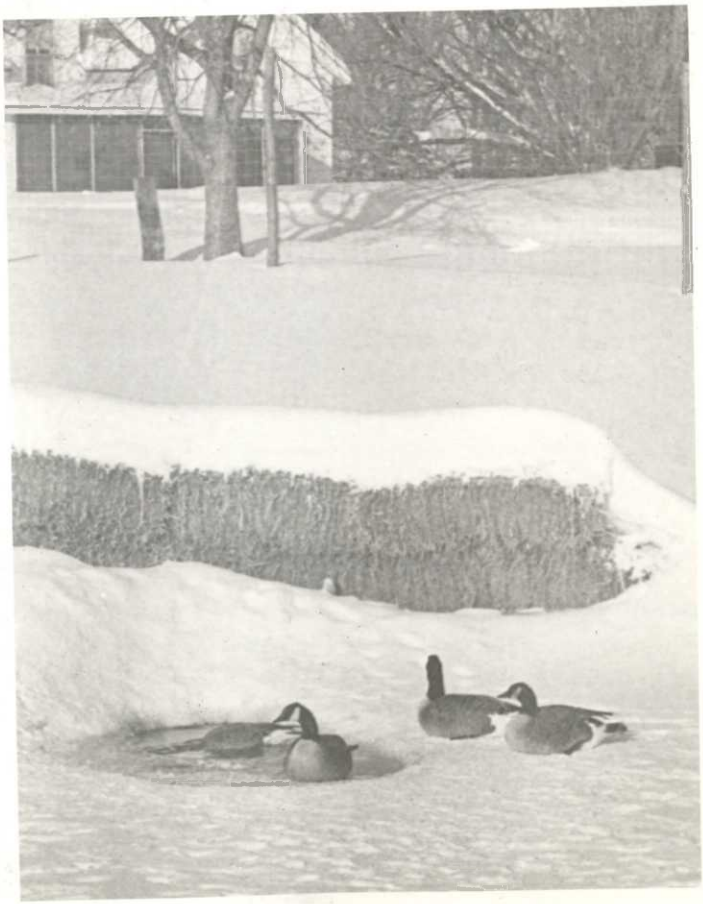
From this summer's work many pieces of pottery and chipped stone were uncovered. Preliminary examination has been completed on 1,500 pieces of pottery with the archaeologists now analyzing the 10,000 pieces of worked stone that were found. The preliminary report is not out yet but will be included in the next narrative. This coming year should prove to be very rewarding in that digging will commence earlier and pick-up where it was left off during this period. It is hoped that continued archaeological work will answer some of the old questions passed down through the years.

2. Progress Report - Captive Giant Canada Goose Flock. The first giant Canada geese for the Sherburne's flock were 15 birds which were picked-up in the spring of 1967. One pair nested of the original 15 birds that year, and raised four goslings. In 1968 we had 101 birds and it was during that year that 16 pair were isolated in breeding pens and a total of 26 goslings were raised. Since that time we have added birds from the Jamestown flock, culled out some of the less desireable birds and shipped a group of goslings south to start a migration study. During this period there were a total of 260 giant Canada geese on the refuge and we had set up individual 50' X 50' breeding pens for 32 pairs. We had 28 pair that nested, out of the maximum of 32, with the first egg laid on April 9. The first egg laid in 1968 was on April 15. First hatch was on May 15, and we tallied up at fall round-up with a total of 115 goslings raised this year. The proposed study involving the Sherburne as the summer area and the Clarence Cannon Refuge as the wintering area took 102 birds off our hands this fall. The study is set up as a pre-determined migration area where by the birds are kept at the Clarence Cannon for a time and then released to return to the place where they were hatched out on the Sherburne. Of the 102 shipped south to Missouri, four were hatched out on the Sherburne in 1967, 17 from the hatch of 26 in 1968, and 81 from the total of 115 raised in 1969. The extra birds are being kept at the Sherburne to be used for replacement stock or to up-grade the standards of the flock if need be. Two separate areas are now set up to handle our captive birds and provide year round quarters. Only the adult paired birds as well as our swan and other display birds are kept at the maintenance shop area. This is a total of 58 Canada's and roughly 20 other species of geese and swan. There are 100 giant Canada geese at the Fox tract of which about 30 are 1969 birds, 30 are 1968 birds, and the rest are all older or adult birds.

If arrangements can be made to increase the number of birds held over during the winter in Missouri and/or develop our wintering facilities, then an attempt will be made to increase our production by incubating the first clutch and letting the birds hatch their second clutch. This would advance the traget date for the realization of a wild free flying breeding population of giant Canada geese at the Sherburne.

All goslings produced this year were web tagged.

-25° !



3. Environmental Education. This will be the year that will be remembered for the Sherburne becoming involved in an Environmental Education program.

The Golden Valley Environmental Science Center was instrumental in setting up recommendations for an involvement type education program at this refuge. Their staff visited the area on numerous occasions and after touring different habitat types developed three specific programs which are: a habitat study, a transect study, and a stream profile study. As a result of this cooperation between the staff of the environmental science center and the Sherburne Refuge, students visiting the refuge will now have the opportunity of becoming actively involved in their environment and its workings. All of the programs are designed so that the teachers prime their classes during the pre-activity training periods in the classroom in what to expect and do on the refuge. This type of programming is designed to put minimum pressure and participation on the limited refuge staff. Post-activities are again designed for the classroom and by using collected materials can become as involved as they desire and for indefinite periods.

To date, 13 different groups have participated in the Environmental Education Program at the Sherburne. These groups have represented roughly 500 children from four different school districts. Our last and special class this year was held on December 9 with over 12 inches of snow on the ground. The groups were two seventh grade classes from the Oak Grove Junior High School in Minneapolis. This program was coordinated with the Environmental Science Center, Regional Office personnel, and the Refuge Staff so as to allow Washington office personnel a chance to evaluate a working program. Messrs. William Colpitts and Daniel Saults were on hand from the Central Office to participate and evaluate this activity.

Since being involved with this type of worthwhile activity, a quick survey was made to determine just how many children we were talking about and might actively participate in this environmental education program. It was determined that there were during the 1969-70 school year roughly 12,000 students registered in schools within a 20 mile radius of the Sherburne Refuge. Figuring an hours travel time would be roughly a 50 mile radius with the refuge as pivot, then a total of 195,000 students would be within participation range. If we use percentages of increase supplied by the school administrators then it is possible that there will be 300,000 elementary and secondary students within a circle having a 50 mile radius from the center of the Sherburne Refuge by 1975.

4. Dutch Elm Disease Control. The first incidence of Dutch elm disease was recorded at Sherburne in the late summer of 1968. To inhibit the spread of the disease, the decision was made to remove all elms from the immediate area - approximately 160 acres. Most of the trees were small, and of no commercial value.

Work started in mid-November, cutting, piling and burning on the spot. Heavy rains made working conditions difficult, and finally flooded the area, bringing the project to a halt.

With the onset of cold weather came snow, up to 36". The job started up again with the men wearing snow-shoes. A D-4 tractor was borrowed from Tamarac JCCC to clear trails and skid trees to burning areas. Work continued in this manner until completion in late March. The stumps were treated with 2-4-5T in April. Over 1,180 trees with a diameter of 4" or more had been removed along with several hundred smaller ones.

Congratulations are in order for Dennis Strom, Biological Technician, who supervised the job, and the entire crew. They put in 2,808 man-hours of labor under very adverse conditions without an accident.

VI. Public Relations

A. Recreational Uses

Public use continues to be a big factor in the management program and continues to grow without any encouragement what so ever. Rough estimates have shown that there were 195,000 elementary and secondary school children for the 1969-1970 season within a fifty mile radius of the refuge. This figure will increase to that of 300,000 school children during 1975. If the percentage of growth continues to be normal. The following items were added, enlarged, or rejuvenated to accomodate the visiting public:

1. The goose pen observation area was enhanced by completing a tour road completly around the display area.
2. Two visitors information stations were added at strategic areas to provide refuge leaflets and brochures to the incoming public.
3. Loops 2 and 3 of the nature trail were put into service by completing 300' of floating boardwalk over a woodland pothole. This area now provides the "Mounds Loop" of approximately one(1) mile in length through the Indian Mound area. This trail is complete with observation platform overlooking Rice Lake and interpretive signs along the trail; the "Marsh Loop" with the main item being the floating boardwalk is about 1 3/4 miles. The emphasis here will be on aquatic and moist soil vegetation which have yet to be worked into an interpretive program; and the "Hiker's Loop" which is nearly 2½ miles long and will be kept as primitive as possible and no interpretive material is scheduled.
4. Our snowmobile trail is two years old this season and was slightly modified. The start-stop area was relocated and a large parking lot provided. This move corresponded with the start-stop of the adjacent Sand Dunes State Forest's snowmobile trail so that between the two trails there will be a total of nearly 20 miles of marked trail.
5. Many, many guided tours are provided to school groups or other organized groups throughout the year and seem to be very popular and informative.. This takes considerable expertise when driving around the refuge leading a large caravan of cars, buses or just plain vehicles. We hope to instigate a mini-com system of communications when leading these groups next year.

B. Refuge Visitors

Visitors to Sherburne were plentiful in 1969. More than 250 persons were considered significant enough to have been requested to sign the "Official Guest Register." Needless to say an attempt to reproduce this list in its entirety would be almost impossible. An attempt to consolidate some of these visits has been made where visits occurred more than once and a partial list of one-time visitors follows:

Date	Name	Title Or Organization & Address	Purpose
1/9 to	Robert Johnson	Area Forester, Tamarac NWR	Forest planning
1/10	Al Johnson	Dist. Forester, " "	" "
1/16	Kenneth E. Broas	Nason-Wehrman-Knight & Chapman	Sher. Co. planning commission data
2/19 to 2/20	Dr. Forrest Lee, NPWRC, Jamestown, N.Dak.		deliver geese & insp.
3/10	Jack O'Konek	Past-Pres., Minn. Cons. Fed.	Info-visit
3/10	Charles Holm	Minnesota Con. Fed.	" "
3/14	Fred G. Bard	Regina,SAsk.	Inspect goose flock
3/14	Fred Lahrman	Regina, Sask.	" " "
3/14	Herb Dill	BSF&W, Reg. Biol.	" " "
3/18	Ron Kabazeick	Minn. State Planning Agency	Discuss ref. planning
3/18	John Morse	" " " "	" " "
3/19	Dave Wilhans	Henn. Co. Park Reserve Dist.	Tour
3/19	Allan Hasse	" " " " "	"
4/21	Bob Arrowsmith	Necedah NWR	Pick up rye seed
4/29	Michael Frome	Field & Stream Magazine	Tour
4/29	Robert Scott	Chief Refuges, Washington	Inspection
5/5	Orville J. Berry	S.C.S.	Check trial plantings
5/5	Leroy Lhotka	S.C.S.	" " "
5/10	Gerald Cummings	F&WS, Havanna, Ill.	Goose project
5/17	Joseph Kadlic	B.S.A., St. Cloud	B.S. camping
5/17	D.E. Padta	BSA, St. Cloud	" "
5/21	Orville Hagman	Mgr., Mille Lacs W.M.A.	Meeting
5/21	Carsten Burros	Area Game Manager, Marshall	"
5/21	Frank Kruneinan	Mgr., Carlos Avery W.M.A.	"
5/21	Morris Paterson	Wildlife Game Mgr. for Minn.	"
6/2	Dave Pederson	St. Francis H.S.	Tour
6/19	Roy E. Landstrom	BSF&W, Denver, Colo.	Research project
7/2	Dr. W.J.Breckenridge,	Univ. of Minn., Mpls.	Marsh hawk observation
7/8	Joseph Hennessy	Mpls. Star Newspaper	Float Trip
7/8	Jack Connor	Mpls. Star Newspaper	" "
7/9	Robley W. Hunt	Mgr., Henn. Co. Park Res.	tour & insp. goose pen
7/9	D.N. Olstad	Henn. Co. Park Res.	" " " "
7/10	Clarence Mordahl	Sher. Co. Weed Insp.	Plant materials check
7/10	Eldor P. Mueller	SCS, St. Paul	" " "
7/10	LeRoy Lhotka	SCS, St. Cloud	" " "
7/10	John McDermand	SCS, Bismarck, N.Dak.	" " "
7/11	Khan MD Mahtabuddin,	Dacca, East Pakistan	Farm Leader exchange
7/11	MD Bahasuddin Mia,	Kalihah, East Pakistan	" " "
7/11	Maghool Minidniazi,	West Pakistan	" " "
7/11	Ruby Yeutter	Tour leader, Clayton, Mich.	" " "
7/11	Field Biology Class,	Lakewood Jr. Coll. (6 members)	Ecology study
7/11	Si Kegler	Minn. Hiway Dept.	Communications check
7/12	Mrs. T.Y.Stelle	Nat'l Audubon Soc., Calif.	Bird watching
7/12	Frances Keimran	M.O.U., Mpls.	" "
7/17	William Peterson	FFA, Foley, Minn.	Tour
7/23	George McDueglin	BSF&W, Washington	Appraisal Review
8/6	Enoch Bjuge	Agr. Ext. Office, Elk River	Plan outdoor classes
8/6	Clif Halsey	UofM., Agri. Ext., St. Paul	" " "
8/11	Sigmund Huse	Vollebekk, Norway	Tour

Date	Name	Title or Organization & Address	Purpose
8/20	John A. Neumann	Minn, Dept. Agri., Sauk Centra	Tour
8/20	Clarence Mordahl	Co. Weed Insp., Elk River	"
8/22	Kenneth Hertel	B.S.A, St. Cloud	Boy scout coord.
8/22	Roy Elmquist	" "	" " "
8/26	Roy E. Stansberry	Phillips Petroleum, Bartlesville,	Okla. Research proj.
8/26	Joel Goldschmidt	M&T Chemicals, N.J.	Research project
8/26	Stephen Kadlin Jr.	M&T Chemicals, N.J.	" "
8/26	John Milyon	Anaconda Wire & Cable	" "
8/30	H.L.D. Henbeck	Johnson City, Tex.	Birdwatching
10/6	Don E. Adams	Div. Mgr., Mark Twain NWR	Pick up geese
10/9	H.C. Hanson	Ill. Nat. History Serv.	Tour
11/10	Rollie Johnson	WCCO-TV, Twin Cities	"
11/10	Karl F. Rolvaag,	Ex-Govenor,Minn., Mpls.	"
11/10	Fran Konynenburg	WCCO-TV, Twin Cities	"
11/10	Donald Knutson	Knutson Companies, Mpls.	"
12/9	Dan Saults	BSF&W, Washington	21rst Classroom
12/9	Bill Colpitts	" "	" "
12/13	Bob Curtis	St. Paul Jaycees	Cons. project
12/13	Bob Bidzinski	" "	" "
12/13	Elmer Nygaard	" "	" "
12/13	Al Leiprutz	" "	" "
12/13	Dick Bittnor	" "	" "
12/13	Steven L. Morrac	" "	" "

Local Minnesota Conservation Department personnel are very generous with their time in cooperating with refuge personnel on mutual problems. Those who were frequent visitors were: Richard Simmons and Wayne Forsythe, Local Conservation Officers, Brian Garvey, Area Forester, Sand Dunes State Forest and Richard Carlsen, Area Game Mgr., Buffalo.

As Sherburne is located only an hours drive from the Minneapolis, Regional Office, a quick trip is easily accomplished by both Refuge and R.O. personnel and the traffic flows both ways. Several groups of Regional Office clerical personnel visited the refuge last summer for a tour. The Division of Refuges sent the first group of girls and evidently results were favorable as soon we had groups from personnel, realty and other offices arriving. The tours were an apparent success as almost everyone indicated they would be back with families and/or friends for another visit.

The following is a list of visitors from the Regional Office who visited the Refuge in 1969 one or more times.

Name	Title & Division
Forest Carpenter	Regional Supervisor, Refuges
Lynn Greenwalt	Assoc. Regional Supervisor, Refuges
James Monnie	Ass't Regional Supervisor, Refuges
John Carlsen	Ass't Regional Supervisor, Refuges
John Winship	Pilot-Biologist, Refuges
Don Reilly	Photographer, Refuges
Bill Aultfather	Forester, Refuges
Clair Rollings	Staff Spec., Land Mgmt.
Marv Duncan	Pub. Use Spec., Recreation
John Ellis	Regional Biologist
Ron Easton	Property Management Ass't
George K. Brakhage	Ass't Regional Supvr., M&E
Bill Ellerbrock	Agent-In-Charge, M&E
Flick Davis	Reg. Supvr., M&E
Goodman Larson	Personnel Officer
Joe Knecht	Architect, Nat'l Planning Team
Ed Crozier	Chief, Nat'l Planning Team
Charles Johnston	Interpretive Spec., Nat'l Planning Team
Laurits W. Krefting	Wildlife Res. Bio., St. Paul
Jack Wolf	Realty
Bill Harrison	Realty
Tom Follrath	Chief, Appraisal
Dave Smith	Realty
Michael Markell	Realty
H.W. Benson	Associate Reg. Supvr., Realty
John Way	Negoiator, Realty
Gordon Jensen	Review Appraiser, Realty
Daniel Dowidat	Engineering
Roger Mustonen	Engineering
Jim Goettle	Engineering
Lou Kowalski	Engineering
Ed Stevenson	Planning Engineer, Engineering
Ross Hanson	Flyway Bio.-Reg. Pilot, Miss. Flyway Mgmt.
Donald Walls	Pub. Rel., Wildlife Services

Many visits were made to the Refuge by Professor Dick Lane, Anthropology Department, St. Cloud State College concerning his excavations of the Indian Mounds and also by Ed Landin, Karen Jostad and others of the Golden Valley Environmental Science Center concerning establishment of an environmental science study area.

In July, Charles Warren, newly assigned Public Use Specialist, at Crab Orchard NWR, Illinois, spent 10 days at Sherburne for orientation purposes.

C. Refuge Participation

Area personnel held or assisted with 43 refuge tours, 21 slide or film presentations, 13 environmental education groups, and 17 miscellaneous meetings.

On September 15 and 16, an outdoor conservation class was held for 6th grade students of Benton, Mille Lacs and Sherburne Counties. This is an annual affair, set up by the University of Minnesota Extension Service, Minnesota Conservation Department and bureau personnel assisted with the planning and presentation to 1200 youngsters.

Score for the year - 94 group meetings with attendence of nearly 5000.

D. Hunting

Minnesota's duck season ran from October 4 through November 12, with a one mallard, four bird limit.

Water levels were quite low. A census made on October 1, showed only 2,000 ducks and 20,000 coots on the area. There was a good rice crop on Little Rice Lake, a state management area north of the Refuge, which held most of the birds until the shooting started. By October 6, a 200 acre marsh in a closed area, Long Pond, held 5,000 birds. The numbers built up to 7,000+ in this area and held there until the birds moved south about November 1. For the last 10 days of the season there were probably less than 1000 ducks on the area.

The feeding flights of the birds at Long Pond started shortly before sundown, providing about 15 minutes of legal shooting and 45 minutes of illegal shooting.

Because of many access areas to the refuge, an accurate estimate of hunters, total kill or adequate law enforcement is impossible with the personnel available. Opening day car counts indicated approximately 500 hunters. Most of these were standing in, on, or around less than 2000 acres of water.

The bureau, and waterfowl managers in general, ever since there has been such an animal, have given much thought to quality hunting. Many people have some very strong feelings on the subject. I have myself. Unfortunately, there are many places with more problems in this area than Sherburne has now, but cut it any way you want, 4 acres of water per duck hunter "ain't quality" - particularly on a National Wildlife Refuge.

Although Minnesota claims more duck hunters than any other state, the people using this area evidently are not used to seeing a couple of

thousand birds in the air at one time. We heard many comments: "I never saw so many ducks, duck production was sure good this year." The fact that people saw ducks was significant. That they were seeing, in the 7,000 birds, probably 90% of the population in this part of the country, meant nothing. "These were lots of ducks." There were no complaints of crowed conditions. That you had very little chance of working a duck into a spread of decoys, seems to be an accepted fact of life. A duck flying across the marsh was meant to be shot at from the time it came into view until shortly after it went out of sight. The main complaint was lack of law enforcement by those who didn't get caught, and "why don't you catch those other guys?", from those that did.

It makes you wonder. I suppose you could call the duck season a success.

One attempt at combating crowded conditions. Fifteen of these signs were erected around an open hunting slough. "D. Larson" could apply to half a dozen people, none of whom had ever owned the property.

Deer season in this area ran from November 8 through 12. With a short season and lower kill it is easier to keep up with who does what. We estimate 1025 hunter days produced 45 deer. Both hunter numbers and success were up from last year. Reports of poor reproduction and poor hunting conditions in northern Minnesota, probably influence several Twin City hunters to try their luck closer to home. Warm, dry weather caused several complaints, but no one held the refuge accountable for that. Twenty-plus days per deer is no record for success, but the season was generally accepted as average in this area.

Ruffed grouse numbers seemed down somewhat from last year. Heavy foliage in the early part of the season kept success low. Hunters reported flushing birds quite often without seeing them. As the leaves fell hunting success improved. Both hunting pressure and success could be called moderate.

The squirrel population was high, hunter population low.

E. Violations

Eleven cases, all waterfowl violations, were processed through local court. All paid $15 and $4 costs.

Name	Address	Charge
Minikus, Neil	New Brighton, Minn.	Late shooting
Minikus, Robert	Richfield, Minn.	" "
Miller, Robert	Columbia Heights, Minn.	" "
Krischuk, Bruce	" " "	" "
Susag, Richard	Alexandria, Minn.	" "
Flugle, Robert	St. Cloud, Minn.	" "
Harders, Fred	Chicago, Ill.	" "
Butkowski, Maynard	Elk River, Minn.	" "
Senski, Martin	Minneapolis, Minn.	Over limit of mallards
Senski, Lawrence	St. Paul, Minn.	" " "
Grashong, Conrad	Minneapolis, Minn.	" " "

F. SAFETY

Regularly scheduled SAFETY meetings were held throughout the year. Possible safety hazards are discussed quite often, particularly when starting new jobs.

Two accidents occurred during the year. A temporary laborer cut his wrist while moving a pump, and a deer attempted to cross the road at a spot which was occupied by a refuge vehicle. Neither resulted in lost time.

The station record is 1,528 days without a lost time accident.

VII. Other Items

A. Items of Interest

1. Personnel. Refuge personnel took advantage of Bureau training courses when possible.

Robert Yoder, Refuge Manager, attended the course Basic Management Techniques I from May 5-9.

Home McCollum, Soil Conservationist, attended the course Basic Management Techniques II from March 3-7.

The Assistant Refuge Manager, David Goeke, attended the Basic Refuge Managers Course at Arden Hills from April 28-May 23. In September, Dave took his newly acquired knowledge and departed for Sullys Hill National Game Preserve in Fort Totten, North Dakota. We were sorry to see Dave and Audre leave, but were happy to see them on their way to a bright future with the Bureau.

2. Acquisition. The first purchases for the Sherburne Refuge were made in 1965 when 65 tracts totaling 7,272 acres were picked up. A total of 5,572 acres were added during 1966 and another 5,004 acres in 1967. The Refuge was now over half purchased for a total of 58%. Once over the hump does not necessarily mean an easy ride downhill as the realtors soon found out when only 3,945 acres were available in 1968 and a meager 600 acres or so in 1969. It appears that we were getting down to the "nitty-gritty" and from here on it may be like pulling teeth. Of the original 267 ownerships involved we have now purchased over 200. This leaves about 60 owners holding approximately 8,000 acres of land. The state has 1,600 acres of land within the refuge boundary with some being Wildlife Management Areas, public access to lakes, and some forest lands. This is in the process of being exchanged and with this acreage in with that which has been acquired the refuge is over 80% purchased.

3. Credits & Photographs. The writing, correcting, editing, and typing was a cooperative arrangement between the Refuge staff. Our Soil Conservationist, Homer McCollum, handled most of Sections III, IV and VI. Our clerk-typist, Pat Dunham, put together the weather data, visitor lists, refuge participation, the narrative forms, and of course the tedious job of typing all of this. The remaining parts such as: I,II, and V were mostly the responsibility of the Refuge Manager.

Photo credits are shown with the narrative.

SHERBURNE NATIONAL WILDLIFE REFUGE

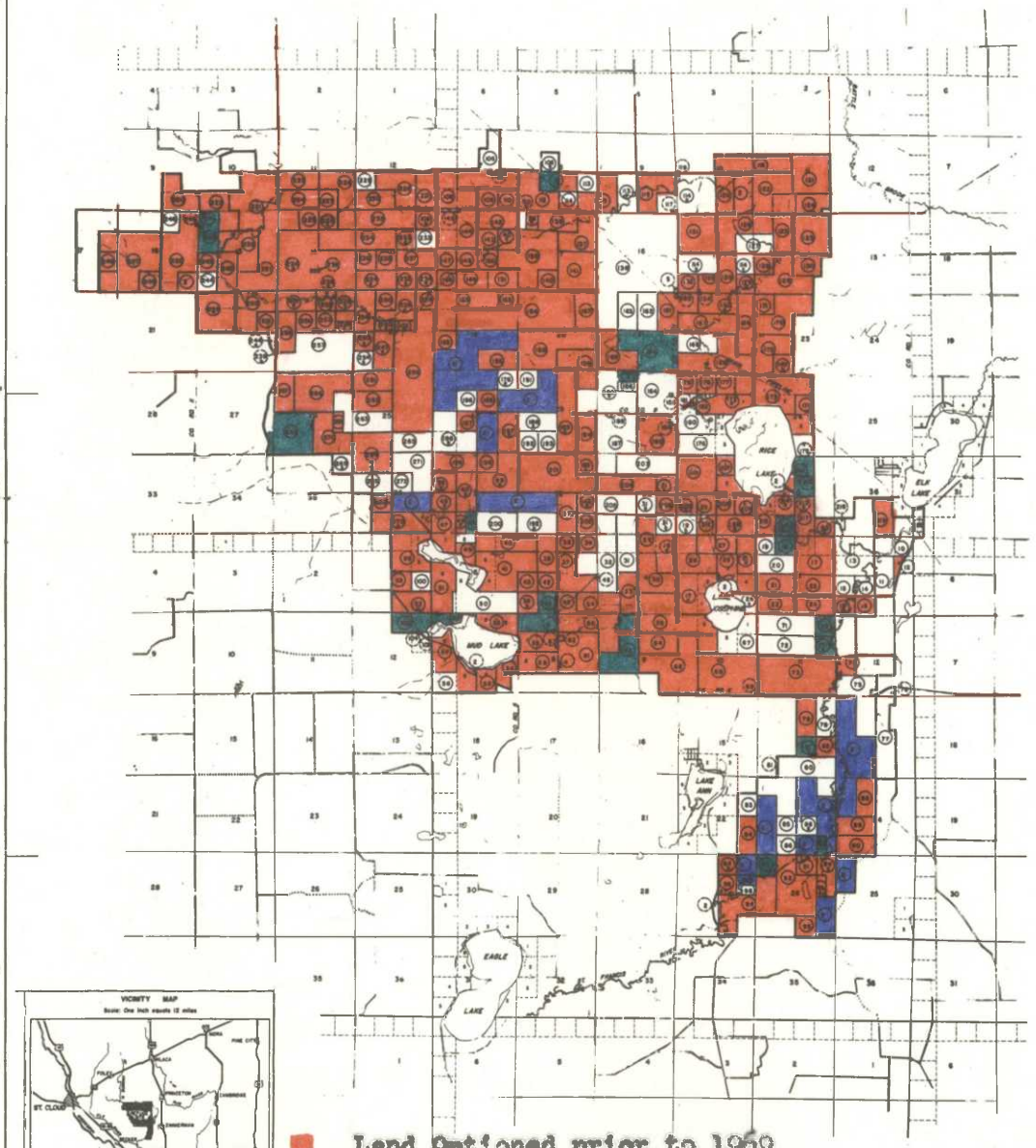
SHERBURNE COUNTY, MINNESOTA

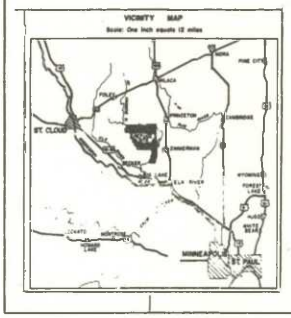
UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

93° 50' R. 28 W. R. 27 W. 93° 40' R. 27 W. R. 26 W.

45° 38'
T. 36 N.
T. 35 N.
45° 30'
T. 35 N.
T. 34 N.
45° 25'
T. 34 N.
T. 33 N.





Land Optioned prior to 1969

Land Optioned in 1969

State Land

93° 50' R. 28 W. R. 27 W. 93° 40' R. 27 W. R. 26 W.

FOURTH PRINCIPAL MERIDIAN

Scale 0 40 80 160 240 320 CHAINS
0 ½ 1 2 3 MILES

TOWNSHIP DIAGRAM

MEAN DECLINATION 1960

COMPILED IN THE BRANCH OF ENGINEERING
FROM AERIAL PHOTOGRAPHS AND SURVEYS
BY THE U.S.G.S.

MINNEAPOLIS, MINNESOTA JAN, 1963

SIGNATURE PAGE

Submitted by:

Robert G. Yoder
(Signature)
Robert G. Yoder

Refuge Manager
(Title)

Date: _____

APPROVED, Regional Office:

Date: 2-26-70

James B. Monnie
(Signature)

Regional Refuge Supervisor

3-1750a
Con' NR-1
(Rev. March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Sherburne MONTHS OF January 1 TO April 30, 1969

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Broods Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:			NO WATERFOWL PRESENT								
Mallard											
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coots:											

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese			
Ducks			
Coots			

SUMMARY

Principal feeding areas _____

Principal nesting areas _____

Reported by Robert G. Yoder

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750a
Con NR-1
(Rev. March 1953)

WATER FOWL
(Continuation Sheet)

REFUGE Sherburne MONTHS OF January 1 TO April 30, 1969

(1) Species	(2) Weeks of reporting period: Mar 12 11	Mar 19 12	Mar 26 13	Apr 2 14	Apr 9 15	Apr 16 16	Apr 23 17	Apr 30 18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling					158	1	1		1120		
Trumpeter											
Geese:											
Canada					250	26	90	90	3192		
Cackling											
Brant						1	2	2	35		
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard		5	10	100	8667	676	312	326	70672		
Black					75	10			595		
Gadwall					122				854		
Baldpate					150	42	30		1554		
Pintail					279	62	12	10	2541		
Green-winged teal					38	225	187	110	4620		
Blue-winged teal					90	150	249	468	6699		
Cinnamon teal											
Shoveler					27	35	10	10	574		
Wood				10	210	275	250	250	6965		
Redhead					10	15	15		280		
Ring-necked				10	1665	200	249	137	2261		
Canvasback					22	65	35	5	889		
Scaup			1	10	864	1989	4677	3120	74627		
Goldeneye					555	184	35	10	5488		
Bufflehead					153	82	62	27	2268		
Ruddy							10	5	105		
Other					25	10			245		
Coots:											
					117	250	250	125	5194		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese			
Ducks			
Coots			

SUMMARY

Principal feeding areas _____

Principal nesting areas _____

Reported by Robert G. Yoder

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NPS-1
(Rev. March 1953)

WATERFOWL

REFUGE Sherburne NWR MONTHS OF May 1 TO July 9, 1969

(1) Species	Weeks of reporting period (2)									
	May 1 7	May 2 14	May 3 21	May 4 28	June 5 4	June 6 11	June 7 18	June 8 25	July 9 2	July 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	90									
Cackling										
Brant										
White-fronted	2	2	2							
Snow										
Blue										
Other										
Ducks:										
Mallard	300	300	250	250	250	250	250	250	250	250
Black										
Gadwall										
Baldpate										
Pintail	10	10								
Green-winged teal	100	75	75	50	50	30	30	30	30	30
Blue-winged teal	525	480	320	200	150	150	150	150	150	150
Cinnamon teal										
Shoveler	10	10	5							
Wood	250	200	200	200	200	200	200	200	200	200
Redhead	2	2	2	2	2	2	2	2	2	2
Ring-necked	540	120	50	30	30	30	30	30	30	30
Canvasback										
Scaup	2300	500	10							
Goldeneye										
Bufflehead	10	5								
Ruddy	5	5	5	5	5	5				
Other										
Coot:	50	15								

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Con NR-1
(Rev. March 1953)

WATER - OWL
(Continuation Sheet)

REFUGE Sherburne MONTHS OF July 16 TO August 31, 1969

(1) Species	(2) Weeks of reporting period: July 16 (11)	July 23 (12)	July 30 (13)	Aug 6 (14)	Aug 13 (15)	Aug 20 (16)	Aug 27 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada									630		
Cackling											
Brant											
White-fronted									42		
Snow											
Blue											
Other											
Ducks:											
Mallard	300	300	350	350	350	400	480		35,910	14	256
Black											
Gadwall							10		70		
Baldpate							15		105		
Pintail									140		
Green-winged teal	30	40	40	40	50	100	200		7,000	2	40
Blue-winged teal	150	150	175	175	250	675	2015		42,525	9	160
Cinnamon teal											
Shoveler									175		
Wood	250	250	250	300	300	450	890		33,180	7	120
Redhead	12	12	10	10	10	10	10		658	1	8
Ring-necked	50	90	125	125	125	135	160		12,110	3	48
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coots:							25		680		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	673	92	0
Ducks	131,873	4.052	632
Coots	630	50	0

SUMMARY

Principal feeding areas Orrock Lake, Rice & Buck Lakes, Lake Josephine, Long Pond, Bergerso, Johnson & Durgin Sloughs

Principal nesting areas

Reported by David E. Goeke, Asst. Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form [illegible]-1
(Rev. [illegible]rch 1953)

WATERFOWL

REFUGE **Sherburne NWR** MONTHS OF **August 27** TO **October 29** 19**70**

(1) Species	Weeks of reporting period (2)									
	Aug 27 (1)	Sept 3 (2)	Sept 10 (3)	Sept 17 (4)	Sept 24 (5)	Oct 1 (6)	Oct 8 (7)	Oct 15 (8)	Oct 22 (9)	Oct 29 (10)
Swans:										
Whistling										
Trumpeter										
Geese:						20				
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:	480	480	480	470	470	470	715	1900	6500	260
Mallard						10		10		
Black	10	10	10	5	5	5		200		
Gadwall	15	15	900	500	960	960	25	5	20	
Baldpate				5	5	5	30	20	10	
Pintail	200	200	125	125	50	50	10	5		
Green-winged teal	2015	2015	1100	1100	210	210				
Blue-winged teal										
Cinnamon teal				5	5	5				
Shoveler	890	890	450	450	5	5				
Wood	10	10	10	5	5	5			2	
Redhead	160	160	115	115	170	70	25	20	320	360
Ring-necked										
Canvasback			5	5	10	10		20	5	
Scaup										
Goldeneye							2	5	2	
Bufflehead			5	5	10	10	2			
Ruddy				40	40	40	55	20	10	
Other (P.B. Grebes)										
Coot:	25	25	10,250	10,250	20,500	20,500	17,760	2830	3575	850

Int. Dup. Sec., Wash., D.C. 37944

3-1750a
Con NR-1
(Rev. March 1953)

WATER OWL
(Continuation Sheet)

REFUGE Sherburne MONTHS OF November 5 TO December 24, 1949

(1) Species	(2) Weeks of reporting period: Nov 5 11	Nov 12 12	Nov. 19 13	Nov 26 14	Dec 3 15	Dec 10 16	Dec 17 17	Dec 24 18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:									140		
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	910	25							92,120		256
Black									140		
Gadwall									1,785		
Baldpate		5							21,035		
Pintail									525		
Green-winged teal									2,355		
Blue-winged teal									16,590		
Cinnamon teal											
Shoveler									105		
Wood									18,830		
Redhead									980		
Ring-necked	720								15,631		
Canvasback											
Scaup	30								735		
Goldeneye											
Bufflehead									63		
Ruddy									224		
Other									11,385		
Coots:											
	270	150	50						463,645		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	140	20	
Ducks	214,716		
Coots	463,645		

SUMMARY

Principal feeding areas: Long Pond, Rice Lake, Orrock Lake
Round Pond

Principal nesting areas:

Reported by: Robert G. Yoder, Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Sherburne N.W.R. For 12-month period ending August 31, 1969

Reported by David Goeke Title Ass't Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
1	Crops	2,186.4	Ducks	43,123	217	207
	Upland	4,380.7	Geese	673		
	Marsh	3,373.7	Swans			
	Water		Coots			
	Total	9,940.8	Total	43,796	217	207
2	Crops	834.7	Ducks	14,242	72	68
	Upland	1,253.0	Geese			
	Marsh	1,095.9	Swans			
	Water	17.9	Coots			
	Total	3,201.5	Total	14,242	72	68
3	Crops	706.6	Ducks	30,726	154	147
	Upland	3,069.4	Geese			
	Marsh	2,182.6	Swans			
	Water	215.7	Coots	400		
	Total	6,174.3	Total	31,126	154	147
4	Crops	983.8	Ducks	21,759	109	104
	Upland	2,104.4	Geese			
	Marsh	1,447.4	Swans			
	Water	250.2	Coots	230		
	Total	4,785.8	Total	21,989	109	104
5	Crops	556.5	Ducks	6,066	30	29
	Upland	1,436.2	Geese			
	Marsh	482.9	Swans			
	Water		Coots			
	Total	2,475.6	Total	6,066	30	29
6	Crops	554.0	Ducks	15,957	80	77
	Upland	2,543.0	Geese			
	Marsh	1,214.7	Swans			
	Water	12.2	Coots			
	Total	4,323.9	Total	15,957	80	77
Total	Crops	5,822	Ducks	131,873	662	632
	Upland	14,787	Geese	673		
	Marsh	9,797	Swans			
	Water	496	Coots	630		
	Total	30,902	Total	133,176	662	632

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should be equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Sherburne Months of January 1 to December 30 1969

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Common loon	2	5/3	3	6/12	3	8/22		1	1	3
American coot	50	5/3	20,500	10/1	20	11/12				75
Great Blue heron	6	5/10	35	6/15	1	10/15			10	40
American bittern	1	5/11	12	6/3	1	10/15				20
Green heron	1	5/10	50	8/1	1	9/15			15	75
Pied-billed grebe	5	5/3	80	7/1	10	10/22			30	150
Black-crowned night heron	1	4/2	2	4/16	2	4/16				10
Horned grebe	1	4/14	45	4/23	23	4/30				100
Red-necked grebe	1	4/11	7	4/12	1	4/23		1	2	25
Sandhill crane	3	4/10	4	4/10	4	10/15		1	2	5
II. Shorebirds, Gulls and Terns:										
Black Tern	1	5/23	100	7/14	8	8/17				200
Killdeer	7	5/3	65	7/7	6	8/31				200
Spotted Sandpiper	1	5/3	15	7/21	1	8/31				50
Greater Yellowlegs	4	5/3	10	5/31	2	8/7				40
Lesser yellowlegs	2	5/3	15	6/14	1	9/15				10
Common snipe	1	4/10	50	4/23	3	10/15				100
Ring-billed gull	1	4/4	35	4/9	20	9/25				50

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	5	5/3	500	7/14	1	10/15		300	1000
White-winged dove									
IV. Predaceous Birds:									
Golden eagle									
Duck hawk	1	11/15	1	11/15	1	11/15			
Horned owl	All year		75	6/1				25	75
Magpie									
Raven									
Crow	All year		290	8/31					500
Bald Eagle	1	11/15	1	11/15	1	11/15			1
Goshawk	2	2/7	2	2/7	2	2/7			2
Sparrow hawk	2	5/3	150	8/19	1	10/15		100	300
Sharp-shinned hawk	1	4/10	15	4/30	15	4/30			30
Red-tailed hawk	7	5/3	25	5/12	1	10/15		15	20
Marsh hawk	1	5/28	2	6/12	1	11/15			20
Broad-winged hawk	1	4/21	1	4/21	1	4/21			1

Reported by Robert G. Yoder

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C. 36104

3-1758
Form M...2
(April 1946)

UPLAND GAME BIRDS

Refuge **Sherburne** Months of **January 1** to **December 31**, 1969

(1) Species	(2) Density	(3) Young Produced			(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres Per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed Grouse	upland, bottomland timber & scrub swamp 15,595 acres		12	100	50:50	500	0	0	1000	
Pheasant	Grassland, reverting agricultural lands marshes & fields 16,058 acres		0	0		0	0	0	25	

3-17[illegible]
Form [illegible]R-3
(June 1945)

BIG [illegible]AME

Refuge Sherburne Calendar Year 1969

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
White-tailed deer	Cropland 5,822 Upland 14,787 Marsh 9,797	U	90	0	0	0	U	U	U	0	-	300	250	U

Remarks:

Reported by J. Douglas Thompson, Bio. Tech.

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-175[illegible]
Form [illegible]-5
60701

DISEA[illegible]

Refuge Sherburne NWR Year 19 69

Botulism

Period of outbreak None this year

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease _____

Species affected _____

Number Affected

Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

-1757
orm NR-1
Rev. June 1960)

(1)

NONAGRICULTURAL COLLECTION RECEIPTS, AND PLANTINGS

Refuge Sherburne Year 1969

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Norway Pine	5000	R		Minn. Forestry	15/M		Sherburne	600/A	16.7 acres		5/5-9		
Black Spruce	2000	R		Service Carlos	15/M								
Colorado Spruce	2000	R		Avery Nursery	15/M								
Norway Pine	1000	R			--								

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings 16.7

Remarks: The 1,000 Norway pine were sent as part of an adjustment for trees purchased in 1968 and sent in very poor condition. No charge was made for these trees.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Sherburne NWR County Sherburne State Minnesota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn	462	16,170 bu.	4	140 bu.	150	5250 bu.	616		
Rye (Harvest 1969)	318	5700 bu.				600 T.			
Rye (Harvest 1970)						300 T.	325	Rye-cover & browse	643
Red & Alsike clover						100 T.	250	Red & Alsike clover cover, browse, green manure	300
Alfalfa							5	cover, browse-alfalfa	155
Sweet Clover							10	cover-sweet clover	10
Native grasses							100	cover, native grasses	180
								Fallow Ag. Land 4530	1288

No. of Permittees: Agricultural Operations 13 Haying Operations 4 Grazing Operations 1

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue
Alfalfa	140	93	$93
Red Clover	75	50	$50
Hay - Wild	None		

GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
1. Cattle	10	40	$10	4
2. Other	None			

	ACREAGE
1. Total Refuge Acreage Under Cultivation	1904
2. Acreage Cultivated as Service Operation	115

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1570
NR-88
(4/54)

REFUGE GRAIN REPORT

Refuge Sherburne National Wildlife Refuge Months of January through December, 1969

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Corn, yellow dent shelled		700	700			400	400	300		X	None
Corn, yellow dent ear	50	400	450			150	150	300		X	None
Barley	50		50			10	10	40		X	40
Rye, emerald	200		200	155	45	[illegible]	200	0			

(8) Indicate shipping or collection points Princeton, Minnesota

(9) Grain is stored at Refuge Granary

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 17065

3-1759
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK
(Seeds, rootstocks, trees, shrubs)

Refuge [redacted] Year 1969

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
Purple vetch	500 lb.	September	combine	.25/lb				

Interior Duplicating Section,
Washington 25, D.C. 17243

3-176J
Form NR
(2/46)

TIMBER REMOVAL

Refuge Sherburne NWR Year 1969

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Nelson's Tree Farms	Sher 7-70	159,a	7.6	thinning to 300 trees/A	.10/tree removed	$55.00	thin to 10-12' centers	white spruce Christmas trees
Nelson's Tree Farms	Sher - 2	22,43,179, 259 & 266	152	905 trees	.25/tree	$226.25	cutting to take place until 1970 Clear cut Scotch. Pine-leave 100 Norway pine/A.	Norway & Scotch Pine Christmas trees
Nan Conifer Co.	Sher - 1	28	35	4,823 Scotch pine	.35/tree	1688.05	Cutting to take place until 1970. Clear cut Scotch Pine-leave 100 Norway pine/A.	Norway & Scotch Pine Christmas trees
				2034 Norway pine	.20/tree	406.80		

Total acreage cut over 194.6 Total income $2376.10

No. of units removed B. F. Method of slash disposal Piled at edge of plantation

Cords

Ties 8312 Christmas trees

INT.-DUP. SEC., WASH., D.C. 36103

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sherburne

Proposal Number: 2-69

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
July 10 - August 15	Leafy spurge	N. & N.E. sections of the Refuge	3	Borolin 2%	3 lb.	1 lb./A	Granular	broadcast
	Canada thistle		5	Tordon 212	15 lb.	3 lb./A	water 3lb/25 gal.	hand sprayer

10. Summary of results (continue on reverse side, if necessary)

This is the first use of Borolin on the Refuge. Control of spurge seemed excellent, however this has been the case in past years with other chemicals also. Field investigation in the spring should reveal actual results.

Tordon 212 has given excellent results with Canada thistle.

35500

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sherburne

Proposal Number: 1-69

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 30 - June 15	Quack grass	all farming sites in corn	616	Atrazine	924	1-2 lb/A	Water 50gal/A	tractor sprayer

10. Summary of results (continue on reverse side, if necessary)

A cool wet spring favored growth of quack grass and reduce effectiveness of the chemical. Control was fair to good.

35500

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Sherburne

Proposal Number: 5-69

Reporting Year: 1969

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June	Poison Ivy	Nature trai	5	2,4-D	10 lb.	2 lb./A	water 25 gal/A.	hand sprayer

10. Summary of results (continue on reverse side, if necessary)

Results only fair. Plants recovered by mid-summer

35500

From left to right: Wesley Thompson, Maintenanceman, Hank Trebesch, Maintenanceman, Robert Yoder, Refuge Manager, and Reuben Mathison, Maintenanceman.

HM

Homer McCollum
Soil Conservationist

MM

Pat Dunham
Clerk-Typist

HM

THE "PERMANENT" REFUGE STAFF

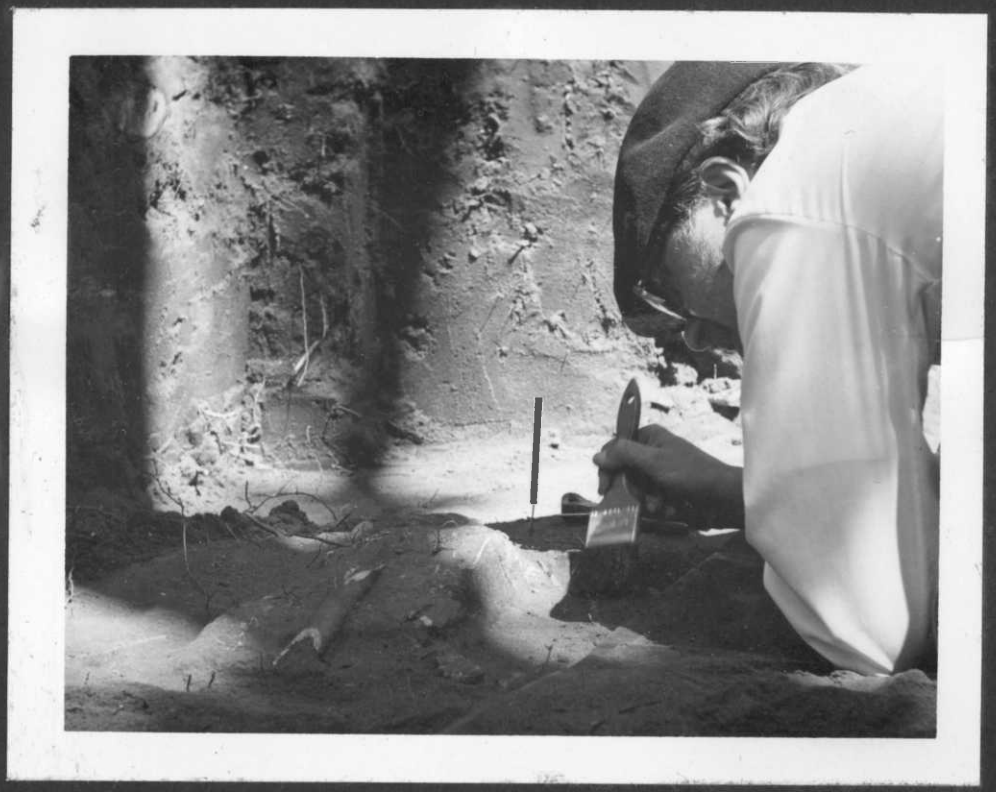
One of the Indian mounds staked off prior to excavation.
The hole was made by treasure hunters many years ago.
DR

Excavation was done by an archaeology class from St. Cloud State College

DR

Did you ever see a more devoted group?

DR



The master's touch.

DG

When the Spring thaw comes.
DR

The farm program at Sherburne utilizes the most advanced farming equipment and technology.

HM

Just for kicks we had a permittee build a couple rows of corn shocks around a field.

HM

Squirrels, rabbits, pheasants, grouse and lesser?? birds used the shocks - almost to the exclusion of the standing corn.

This sort of arrangement worked as well --
HM

as this to reduce vehicle trespass, and
looks a lot better.
Neither was 100% effective.

HM

The "big picture"- 600 6th graders attending outdoor education field day.
RJ

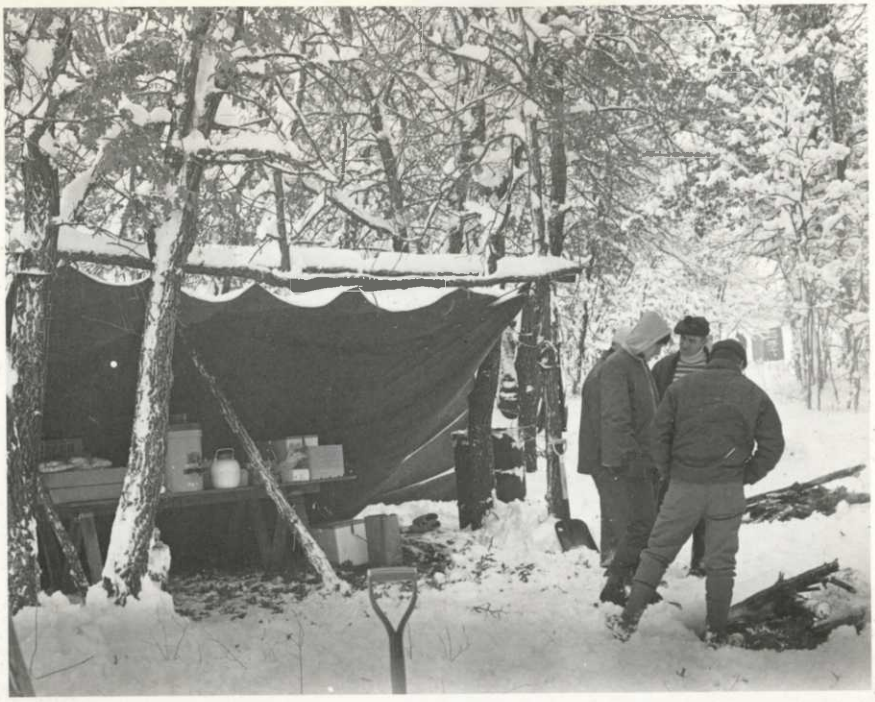
They formed small groups and moved from station to station.
RJ

ENVIRONMENTAL EDUCATION

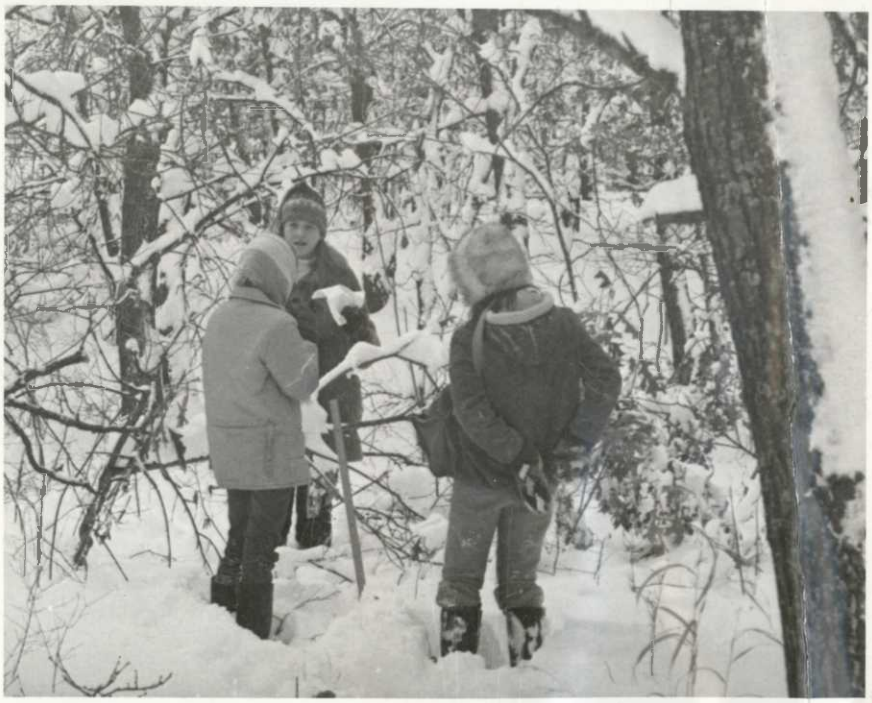
They come in the summertime - -

DG

"Cook Shack" for Environmental Education class. December 1969
HM



and part of the winter too.



Recording temperature differences at various snow depths.
HM

It isn't always easy to get to the top or stay there.

HM

The background is not out of focus - that's hot air.
Cold, wasn't it Dan?

HM

The second water control gate on the area. Installed on a culvert under Co. Road # 5.

This short levee was constructed to work in conjunction with the slide gate.

Borrow pits along Co. Road 5 were deepened and islands constructed in the centers.